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number, the gross weight being considerably less. He found also that the leaves were obviously injured by the flesh food and that the power of the plants to resist the winter was diminished. He thinks the epithet "carnivorous" to be inappropriate. On the other hand, Von Heldrich, according to the *Journal* of the Royal Microscopical Society, has found a Pinguicula on the upper side of whose leaves are a large number of bodies of insects in an earlier or later stage of digestion by the glands plentifully sprinkled over its surface. This is the first insectivorous plant yet recognized in Greece.——By the will of the late Stephen C. Olney, of Providence, R. I., his herbarium of from 8000 to 10,000 species of plants, and his library of botanical works numbering some four hundred volumes, and an excellent microscope, with $10,000 for the increase of the library and herbarium, have been bequeathed to Brown University. The library contains many costly works. The herbarium comprises, besides a fine series of Carices, on which the donor bestowed much labor, many Western and South-western plants named by Gray, Cuban plants, Austin's, Sullivant and Lesquereux's mosses, and good series of algæ and lichens. The author's botanical labors were recognized some years since in the establishment of the genus Olneya. The College also receives from him the sum of $25,000 for a professorship of natural history.

ZOÖLOGY.[1]

TWENTY-SIX DAYS AT SEA, IN AN OPEN BOAT, CRUISING FOR WHALES.—We left San Francisco on a small steam propeller known as the *Rocket;* length about thirty-five feet, eight feet beam, and about five and a-half tons register.

The day we left being fine, we had a very pleasant trip as far as Point Reyes, which is about thirty-five miles north of San Francisco, but saw nothing of importance on the way, except now and then numerous albicore and the porpoises sporting in the sea. We anchored in Drake's bay for the night. Early on the following morning we steamed up and took a cruise outside, and in a few hours heard the familiar sound, "There she 'blows,'" and the captain, with spy-glass in hand, answering, "Where-away?" with the answer, "Just on the lee bow, about half a mile ahead!" Getting everything in order, we steered for him, and soon saw several whales swimming very fast and going northwards. Now one approaches which proves to be a sulphur bottom whale (*Sibbaldius sulphureus* Cope), seventy-five to eighty feet long, just under the bow of the boat, in fact almost too close for a shot. The captain fired one of the well-known Fletcher, Suits & Co. California whaling rockets, and patent bomb lance. This apparatus consists of a gun-metal cylinder filled with a peculiar composition made only by themselves, to which is attached, in front, a bomb with a barbed point; inside the bomb (Fig. 1) is an explosive charge and a chain toggle, which is released by the bursting of the shell on entering the whale; an iron shaft is attached to the rear end of the rocket (as shown in Fig. 2) through which the whale line is spliced, this also shows the chain toggle after it is released, so that when it is inside of a whale it has a sure hold. In some experiments with these bombs on the beach before starting, one carried a whale line, of two and a-half inches in circum-

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[1] The departments of Ornithology and Mammalogy are conducted by Dr. ELLIOTT COUES, U. S. A.

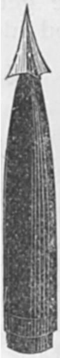

Fig. 1.

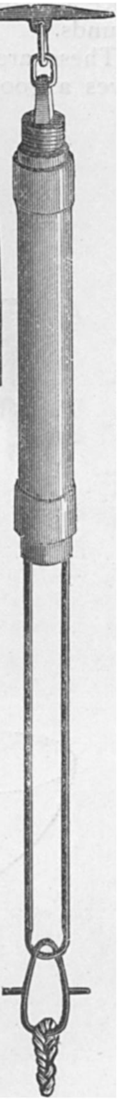

Fig. 2.

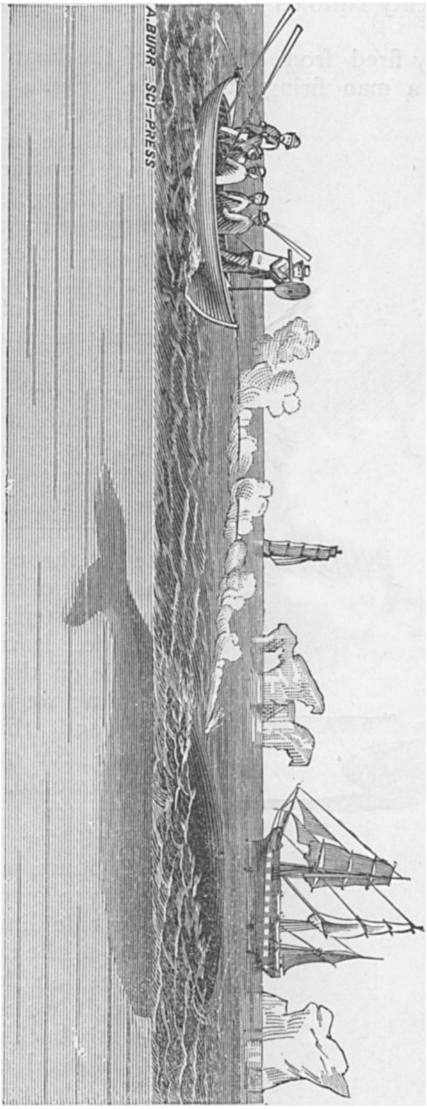

Fig. 3.

California Whaling Rocket and Patent Bomb Lance.

ference, about sixty fathoms, which shows what power they have, since a bomb and twenty fathoms of line weigh about fifty-five pounds.

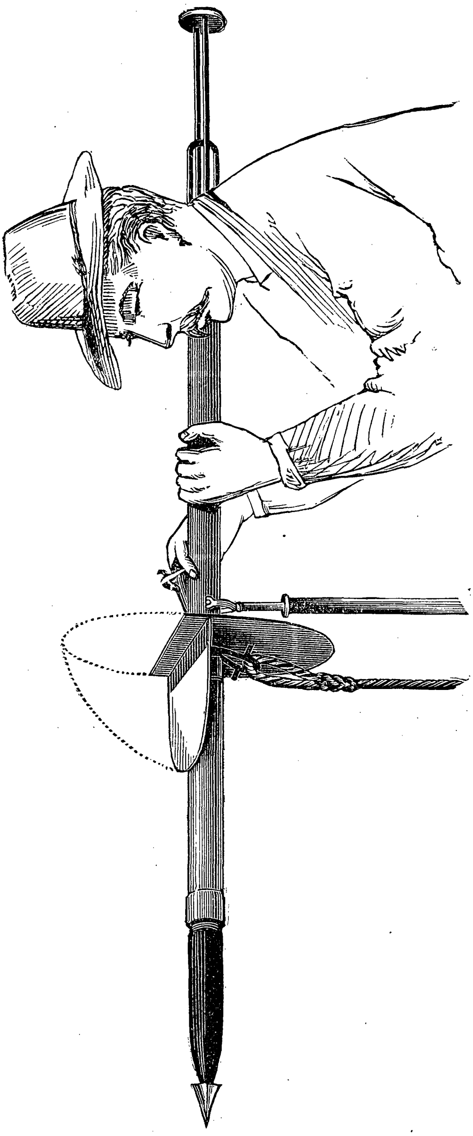

FIG. 4.—Enlarged view of the complete apparatus.

These are generally fired from the bow of the boat. Fig. 3 gives a good idea of a man firing at a whale. Fig. 4 gives an enlarged view of the complete apparatus before being fired. The hinged flange is thrown up by the rocket passing out, protecting the face from injury. At a distance of from twenty to thirty fathoms it is almost sure to explode and kill the whale, if it hits him, but in our case, we being too close to the whale, about ten feet distant, the bomb went through him, just abaft of the flukes, and bursted on the outside, leaving the toggle on the outside of him; we were now fast, and the whale towed the propeller, which would, perhaps, weigh ten tons, coal and all, for three or four hours, with from twenty to forty fathoms of whale line, sometimes at the rate of ten miles an hour, although we were frequently backing under a full head of steam. This, if we were going ahead and nothing to hinder, would carry the propeller about ten miles an hour, thus showing the immense strength of the whale. This species of whale is seldom attacked by the whalers on account of its being so much swifter than any other whales known. We held on to him as long as we could, hoping he would soon give up, as he was going so fast and at such a distance from us, we could not get another shot at him, and it being near sundown, and we over ten miles from land, we commenced to shorten up the line as much as possible intending soon, if he did not give up, to cut the line and let him go. While doing so the line parted, and we lost about ten fathoms and the rocket. Thus ended one of the fastest and most exciting rides I ever had behind one of the monsters of the deep.

We now steamed towards Drake's bay, where we anchored for the night.

On a subsequent day we went out and saw numerous sulphur bottoms, but all swimming fast and going northward. We could scarcely approach them, but finally firing a shot at one, we missed him. We did not get any more chances at them during the day, and at night returned to Drake's bay.—*C. D. Voy.*

LIST OF CALIFORNIAN REPTILES AND BATRACHIA COLLECTED BY MR. DUNN AND MR. W. J. FISHER IN 1876.—The following species were collected by Mr. Dunn in a district about seventy-five miles south-east of San Diego:

BATRACHIA.

Plethodon croceater Cope.

OPHIDIA.

Crotalus lucifer B. and G.

LACERTILIA.

Cnemidophorus tessellatus sub. sp. *tessellatus* Say.
Callisaurus dracontoides Blainville.
Uta thalassina Cope.
Uta stansburiana B. and G.
Uta ornata B. and G.
Sceloporus clarkii subsp. *zosteromus* Cope.
Phrynosoma coronatum Blainville.

The following were collected in Lower California, at or to the south of Magdalena bay, by Mr. W. J. Fisher:

BATRACHIA.

Batrachoseps attenuatus ? La Paz.

OPHIDIA.

Hypsiglena ochrorhyncha Cope.
Rhinochilus lecontei B. and G.

LACERTILIA.

Chirotes sp. ? La Paz.
Cnemidophorus maximus Cope.
Phrynosoma regale Gir. Las Animas bay.
Dipsosaurus dorsalis Hallowell.

Prof. E. D. Cope has kindly identified the rarer species, and has verified the identification of the others.

The single example of *Plethodon croceater* is, I am told by Prof. Cope, the only one now known to be extant.

Uta thalassina, a very rare species, is represented by two specimens.

The occurrence of Chirotes in Lower California has been previously noted by Prof. Peters, of Berlin, but as his papers upon the subject are not accessible to me, I cannot be certain to which of the two described species the specimens belong.

The *Batrachoseps* appears to be *attenuatus*, and if so, proves that species to have a more southerly range than has been hitherto supposed.—*W. N. Lockington.*

THE GASTRULA OF VERTEBRATES AND THE GASTRÆA THEORY.—The amount of attention now being given to embryology is very great, and of papers and memoirs upon this topic there is no end, while the subject is still apparently in its infancy. To Haeckel, who first showed that all animals above the Protozoans pass through a so-called morula and gastrula condition, much of this recent activity is due. However crude and open to criticism much of his work may have been, he has marked out a new line of investigation, and his gastræa hypothesis has been, with all its necessary assumptions and crudities, most fruitful in results. His early generalization that most if not all many-celled animals pass through the condition of a two-layer sac with a primitive opening and digestive canal (his gastrula) has been sustained by Balfour, Lankester, Kuppfer, Benecke, and others. The observations of the two last named authors on the salamanders, lizards and turtles have enabled them to extend the gastræa theory into the great division of the Amniote Vertebrata, and, it is claimed, does much to explain the phylogenetic history of the allantois. A gastrula state is now known to be common to Amphioxus, the lamprey, sharks, ganoids, bony fishes, as well as to all higher vertebrates. Kuppfer and Benecke have discovered that in the embryo turtle the gastrula-cavity is continued into the intestine (or hind gut) and that therefore it forms the rudiment of the allantois.

ZOÖLOGICAL NOTES.—A. D. Michael states in the *Journal* of the Royal Microscopical Society that after placing some Oribatid mites in one per cent. solution of osmic acid for several hours, and then putting them in fifty per cent. alcohol for several more hours, and finally in absolute alcohol for several additional hours, they came out, naturally to his surprise, "all alive and apparently not much the worse."——M. Dareste states that the amnion is occasionally absent in the embryo chick, though the germs would probably not live to break the shell.——In a paper on the locomotion of land snails, Dr. Simroth discusses the action of the muscles of the foot and their relation to the nerves, and draws attention to the interesting relations between the circulatory system and the locomotor muscles. It seems that the foot of the slug can only contract so long as it is swollen out by blood, the sinus in the middle line of the foot forming a veritable *corpus* *cavernosum.*——Three species of Helix having been shown to be viviparous, a fourth (*Helix studeriana*, from the Leychelles) has been found by Vignier to bring forth its young alive.——The so-called proboscis of Pterotrachea, a Heteropod mollusc, has been found to possess organs of taste, the gustatory papillæ having, it is claimed by Todaro and Milone, the same structure as those of the Mammalia.——Indications of the molting of the horny beak of a penguin (Eudyptes) were presented to the Zoölogical Society by Dr. Mulvany.——It appears that the Phylloxera in France resisted the severe cold and deep snow of the past winter, the temperature in December having been below 10° and 12° F. No remedies have yet proved successful in dealing with this dreadful pest.

ANTHROPOLOGY.[1]

AMERICAN ETHNOLOGY.—In the history of every science there are periods when the student may lay aside the apparatus of the investigator and bring together the results of varied researches into one general view. Such an opportunity offered itself, and was well utilized, when Mr. John D. Baldwin, profiting by the labors of Schoolcraft, Squier and Davis, Stephens, Catherwood, the earlier Government surveys, and the Smithsonian Institution, as well as the older authorities, published, in 1871, his "Ancient America."

A personal familiarity with the very arena on which the history of the Mound-builders was enacted, and the accumulation of new materials, induced Dr. J. W. Foster, in 1873 to publish his "Prehistoric Races in the United States."

Since the explorations, upon which this work is based, were made, the Smithsonian Institution has continued to publish additional facts every year; the Centennial Exhibition has added fresh enthusiasm to archæological research, the Government surveys have brought to light the old civilizations of the Colorado valley, Dr. Rau has published his "Archæological Collection of the U. S. National Museum," the Peabody Museum, the Davenport Academy, and many other State institutions have sent forth the results of their special investigations, and finally, Mr. Bancroft's "Native Races of the Pacific States," has brought together about all that is valuable in the pages of its predecessors. Taking advantage of these accumulations, Mr. John T. Short, of Columbus, Ohio, has just brought out, through Harper & Brothers, a new summary entitled, "The North Americans of Antiquity: their Origin, Migrations, and the type of civilization considered."

The work consists of eleven chapters, treating of the ancient inhabitants of the United States, antiquity of man on the Western continent, origin of the ancient Americans, especially the Mound-builders, the Pueblos and Cliff-dwellers, the Mayas, and

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[1] Edited by Prof. OTIS T. MASON, Columbian College, Washington, D. C.